TECHNICAL GUIDANCE

Ideal for flow measurement and control of cleaning and CMP processes
ULTRA-CLEAN, ULTRASONIC FLOWMETER

SFC2000

RoHS Compatible CE

Converter for UCUF ultrasonic flowmeter

OUTLINE

The UCUF series ultrasonic flowmeter is designed for measuring small flow rates of ultrapure water and chemical liquids. All wet parts are made of special grade PFA molds and have no moving parts or sealing mechanism such as an O-ring which would accumulate liquid components. The simple and smooth construction leaves no residues and is ideal for processes such as semiconductor manufacturing which requires ultimate cleanliness.
The SFC2000 is a converter for UCUF series ultrasonic flowmeters. Equipped with a next-generation upgraded chip, this product improves the resolution of measuring the propagation time of ultrasound waves and the stability, and also significantly reduces the power consumption (at least 50 % less than our conventional models).
The housing is redesigned to be more compact (50 % smaller than conventional models) to save installation space. Up to eight units can be connected by using commercial TBUS connectors.

FEATURES

- Next-generation upgraded chip
  The chip enables the SFC2000 to measure propagation time at high speed (output resolution: 45 ps). This reduces the CPU load and power consumption, thus curbing a rise in temperature and ensuring stability.
- Compact
  Separated from the detector, the converter is compact and lightweight.
  50 % smaller than conventional models
  The DIN rail bus connector reduces wiring to the power supply and RS485 connector.
  The SMB connector also makes the body smaller.
- Cleared EMC test: EN61326-1: 2006
- RoHS compatible
- Liquids with kinematic viscosity of as high as 40 mm^2/s can be measured.
- Detector with highly clean construction
- Corrosion resistant and easy to install
- Accuracy: Within ±1 % of the reading at flow velocity of 1 m/s or more
- New function: Error history saving function
- Simple parameter setting
- Stronger resistance to bubbles
  It is difficult for conventional ultrasonic flowmeters to measure fluids containing bubbles because the bubbles disturb the propagation of ultrasound waves. A new technology for measuring propagation time based on our accumulated field experience has eliminated the abnormal output caused by bubbles.

STANDARD SPECIFICATIONS

Model		SFC2000-0	SFC2000-A
Power supply		24 V DC ± 10 %	24 V DC ± 10 %
Consumption current		Approx. 40 mA (Approx. 150 mA at start up)	Approx. 65 mA (Approx. 150 mA at start up)
Inrush current		1 A or lower	
Output	Pulse output	• Frequency pulse output Open collector Load rating: Within 30 V DC, 10 mA Duty ratio: 1:1 Pulse rate: 0 to 1000 Hz (full scale)	
	Current output	–	4 to 20 mA DC Load resistance: Within 500 Ω
Input	Sensor signal	Exclusive cable (SMB connector)	
Communication function		RS485 communication function Protocol: MODBUS Up to 32 units can be connected	

- Measuring fluid : Liquids
- Fluid temperature : 5 to 90 ℃
- Fluid sound speed : 400 to 2500 m/s
- Fluid kinematic viscosity : 0.3 to 40 mm^2/s
- Flowmeter and flow range

Flowmeter	Flow range (L/min)	
	Min.	Max.
UCUF-04M	0 to 0.05	0 to 2.0
UCUF-04HM	0 to 0.05	0 to 3.0
UCUF-06M	0 to 0.4	0 to 8.0
UCUF-10M	0 to 1.0	0 to 20.0
UCUF-15M	0 to 3.0	0 to 50.0
UCUF-20M	0 to 4.0	0 to 80.0

* SMB coaxial connectors are used.
* Consult us about other models.

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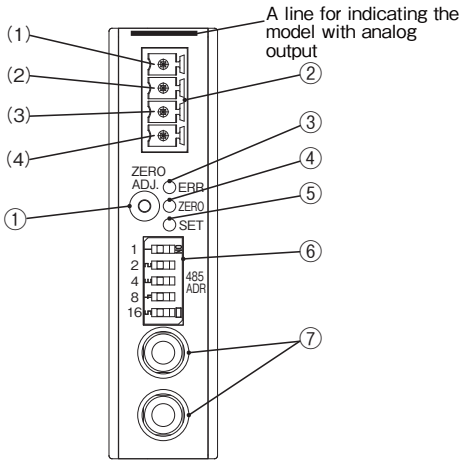
- Low flow cutoff : 0 to 25 %F.S.
- Linearizer : Automatic compensation with kinematic viscosity setting
  Manual /10 line-segment approximation (Option)
- Status indication : ERROR, ZERO/AGC (by red LEDs)
  SET (by blue LED)
- Address switch : 1 to 32 (Selectable)
- Ambient temperature : 0 to 60 ℃ when installed alone
  0 to 50 ℃ when installed at 5-mm intervals
  0 to 40 ℃ when installed in contact
  See the instruction manual for details of linked installation.
- Humidity : 30 to 95% RH without condensation
- Installation : DIN rail installation
- Connection capacity : Up to 8 units can be linked together. The number of units can be increased with an inrush current control power supply (as long as it does not exceed the 8A current rating of the bus connector). Please consult us.
- Enclosure classification : IP30 (Indoor use)
- Material : PA66 (Gray)
- Mass : Approx. 70 g (without analog output)
  Approx. 75 g (with analog output)

MODEL CODE

SFC2	□	00-	□	Description
	0			UCUF-04, 06
	1			UCUF-10, 15, 20
			0	Without analog output
			A	With analog output (DC 4 to 20 mA)
			G	With analog output (DC 0 to 20 mA)
			H	With analog output (1 to 5 V DC)
			N	With analog output (0 to 5 V DC)
			P	With analog output (0 to 10 V DC)

FRONT



No	Name	Description
1	Zero-point adjustment switch	Push this button to adjust the zero point.
2	Connectors (4 terminals) for pulse output and analog output	Terminals for pulse and analog output
3	ERROR lamp (Red)	Lights up in case of an abnormal state when receiving signals.
4	AGC/ZERO lamp (Red)	Lights up when an AGC error occurs. Blinks when adjusting the zero point.
5	SET lamp (Blue)	Lights up or blinks when setting parameters for communication.
6	RS485 address switches	For setting slave addresses
7	SMB connectors	For connecting sensor cables

SMB connector

Terminal	Color	Polarity	Description
IN	Red	Inlet	Sensor signal input
OUT	Black	Outlet	

Terminal arrangement of pulse output and analog output

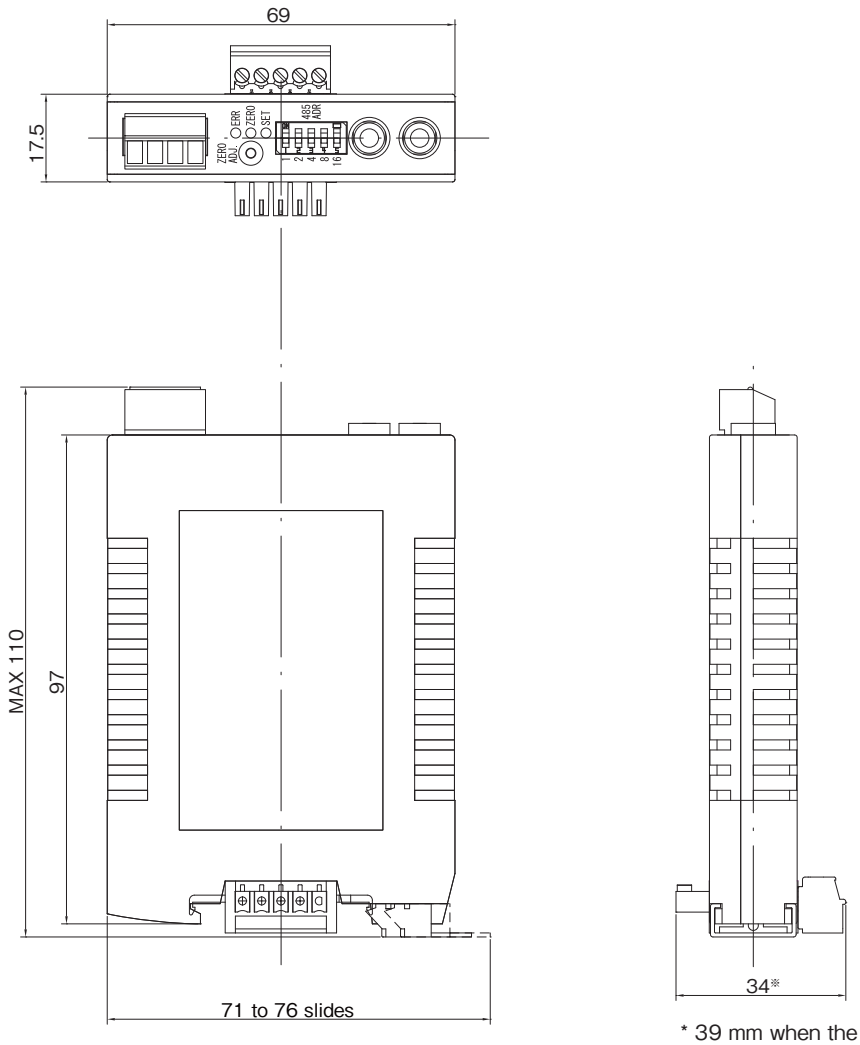
Without analog output (SFC2000-0)

Terminal No.	Terminal name	Description
1	P.OUT (＋)	Pulse output (＋)
2	P.OUT (－)	Pulse output (－)
3	NC	No connection
4	NC	No connection

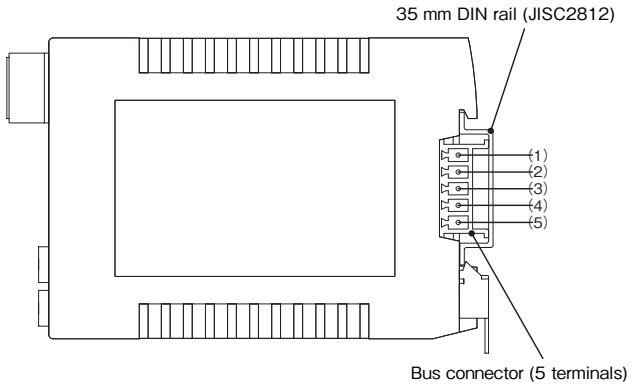
With analog output (SFC2000-A, etc.)

Terminal No.	Terminal name	Description
1	P.OUT (＋)	Pulse output (＋)
2	P.OUT (－)	Pulse output (－)
3	A.OUT (＋)	Analog output (＋)
4	A.OUT (－)	Analog output (－)

DIMENSIONS



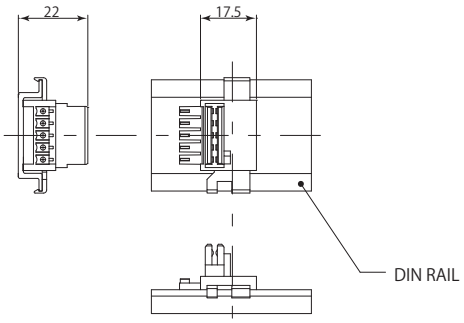
* 39 mm when the bus connector 2 is connected for SFC2000-A, etc.



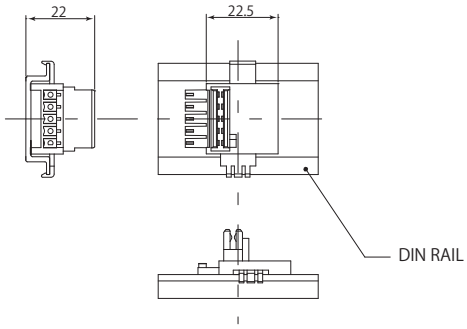
Terminal arrangement of bus connector

Terminal No.	Specification/name	Description
1	DC POWER (0 V)	24 V DC power supply (−)
2	DC POWER (24 V)	24 V DC power supply (+)
3	RS485 SG	RS485 signal ground
4	RS485 (+)	RS485 communication (+)
5	RS485 (−)	RS485 communication (−)

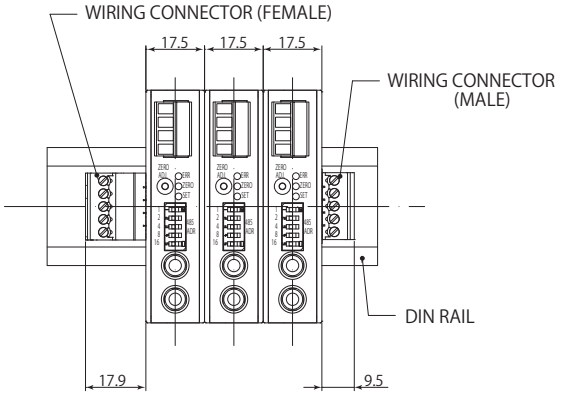
Bus connector 1



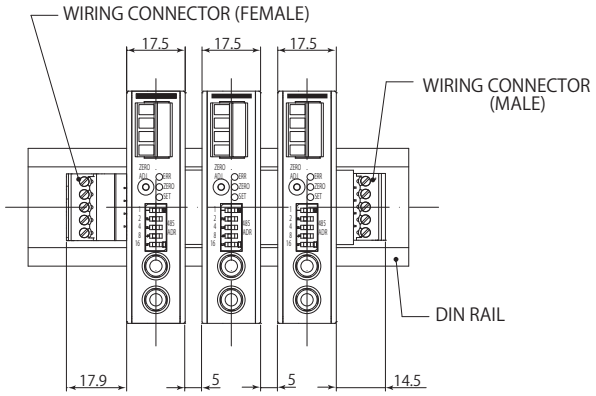
Bus connector 2



Connected with bus connector 1



Connected with bus connector 2



Connectors

Type	Specification	Model	Order No. of PHOENIX CONTACT	Applicable cable	Remarks
Bus connector 1 (for SFC2000-0)	5 terminals with 3.81 mm pitch, gray (17.5 mm width)	ME 17.5 TBUS 1.5/ 5-ST-3.81 KMGY	2713645	—	For connecting a converter (17.5 mm width)
Bus connector 2 (for SFC2000-A, G, H, N, P)	5 terminals with 3.81 mm pitch, gray (22.5 mm width)	ME 22.5 TBUS 1.5/ 5-ST-3.81 KMGY	2713722	—	For connecting a converter (22.5 mm width)
Bus connector for wiring (female)	5 terminals with 3.81 mm pitch, green (socket)	IMC 1.5/5-ST-3.81	1857919	AWG # 28-16	For wiring 24 V DC power supply, RS485, terminator
Bus connector for wiring (male)	5 terminals with 3.81 mm pitch, green (plug)	MC 1.5/5-ST-3.81	1803604	AWG # 28-16	For wiring 24 V DC power supply, RS485, terminator
Wiring connector for pulse output / analog output	4 terminals with 3.81 mm pitch, green (plug)	MC 1.5/4-ST-3.81	1803594	AWG # 28-16	Substrate-side connector MC 1.5/4-G-3.81 P26 THRR32

* Specification is subject to change without notice.

TOKYO KEISO CO., LTD.

Head Office : Shiba Toho Building, 1-7-24 Shibakoen, Minato-ku, Tokyo 105-8558
Tel : +81-3-3431-1625 (KEY) ; Fax : +81-3-3433-4922
e-mail : overseas.sales@tokyokeiso.co.jp ; URL : http://www.tokyokeiso.co.jp